Amendments to the Claims:

1. (Currently Amended) A recuperated gas turbine engine system employing catalytic combustion, comprising:

a compressor arranged to receive air and to compress the air;

a fuel system operable to supply fuel into the compressor, such that a mixture of compressed air and fuel is discharged from the compressor;

a catalytic combustor operable to combust the mixture to produce hot combustion gases;

a turbine arranged to receive the combustion gases and expand the gases to produce mechanical power that drives the compressor;

a recuperator arranged to receive exhaust gases from the turbine and the mixture discharged from the compressor and cause heat exchange therebetween such that the mixture is pre-heated before entering the catalytic combustor; and

a system operable to direct a portion of turbine exhaust gases into the compressor during part-load and full-load operation of the gas turbine engine~~,~~ such that the mixture discharged from the compressor is raised in temperature by said exhaust gases, whereby an inlet temperature to the catalytic combustor is raised, wherein said system comprises a valve that is controllable to variably adjust a flow rate of the exhaust gases into the compressor, and a control system operably connected to the valve.

2. (Canceled)

3. (Currently Amended) The recuperated gas turbine engine system of claim [[2]]1, wherein the control system includes a sensor operable to measure a parameter indicative of combustor inlet temperature, the control system being operable to control the valve in a manner to cause the combustor inlet temperature to exceed a predetermined minimum temperature necessary for proper operation of the catalytic combustor.

4. (Currently Amended) ~~The recuperated gas turbine engine system of claim 3~~A recuperated gas turbine engine system employing catalytic combustion, comprising:

a compressor arranged to receive air and to compress the air;

<u>a fuel system operable to supply fuel into the compressor, such that a mixture of compressed air and fuel is discharged from the compressor;</u>

<u>a catalytic combustor operable to combust the mixture to produce hot combustion gases;</u>

<u>a turbine arranged to receive the combustion gases and expand the gases to produce mechanical power that drives the compressor;</u>

<u>a recuperator arranged to receive exhaust gases from the turbine and the mixture discharged from the compressor and cause heat exchange therebetween such that the mixture is pre-heated before entering the catalytic combustor; and</u>

<u>a system operable to direct a portion of turbine exhaust gases into the compressor, such that the mixture discharged from the compressor is raised in temperature by said exhaust gases, whereby an inlet temperature to the catalytic combustor is raised, wherein said system comprises a valve that is controllable to variably adjust a flow rate of the exhaust gases into the compressor, and a control system operably connected to the valve, the control system including a sensor operable to measure a parameter indicative of combustor inlet temperature, the control system being operable to control the valve in a manner to cause the combustor inlet temperature to exceed a predetermined minimum temperature necessary for proper operation of the catalytic combustor</u>, wherein the control system further comprises a sensor operable to measure air flow rate and a sensor operable to measure fuel flow rate, and a sensor operable to measure recuperator inlet temperature, the control system operable to determine fuel/air ratio of the mixture entering the combustor based on the flow rates of air, fuel, and exhaust gases, and to control the flow rate of exhaust gases into the compressor so as to optimize the combustor inlet temperature for said fuel/air ratio in such a manner that a maximum allowable recuperator temperature is not exceeded.

5. (Original) The recuperated gas turbine engine system of claim 4, wherein the control system is further operable to control the combustor inlet temperature for said fuel/air ratio in such a manner that an efficiency of the engine is maximized.

6. (Original) The recuperated gas turbine engine system of claim 5, further comprising means for determining a level of emissions from the engine, and wherein the control system is

operable to control the combustor inlet temperature for said fuel/air ratio in such a manner that a maximum allowable emissions limit is not exceeded.

7. (Original) The recuperated gas turbine engine system of claim 6, wherein the means for determining a level of emissions comprises an emissions sensor.

8. (Original) The recuperated gas turbine engine system of claim 5, further comprising means for determining a level of emissions from the engine, and wherein the control system is operable to control the combustor inlet temperature for said fuel/air ratio in such a manner that emissions are minimized.

9. (Currently Amended) The recuperated gas turbine engine system of claim [[2]]<u>1</u>, wherein the valve is located downstream of the recuperator such that the exhaust gases are cooled in the recuperator before being directed into the compressor.

10. (Currently Amended) The recuperated gas turbine engine system of claim [[2]]<u>1</u>, wherein the valve is located upstream of the recuperator such that the portion of exhaust gas bypasses the recuperator and is then directed into the compressor.

11. (Original) The recuperated gas turbine engine system of claim 1, further comprising an electrical generator arranged to be driven by the turbine.

12. (Currently Amended) A method for operating a gas turbine engine<u> at part-load and full-load operating conditions</u>, comprising the steps of:

compressing air in a compressor;

mixing fuel with compressed air from the compressor to produce an air-fuel mixture;

burning the air-fuel mixture in a catalytic combustor to produce hot combustion gases;

expanding the combustion gases in a turbine to produce mechanical power, and using the mechanical power to drive the compressor;

passing exhaust gases from the turbine through a recuperator and passing the air-fuel mixture through the recuperator to pre-heat the mixture by heat exchange with the exhaust gases;

directing a portion of exhaust gases from the turbine into the compressor to raise an inlet temperature to the combustor; and

wherein during part-load and full-load operation of the gas turbine engine the fuel is passed through the compressor along with the air and the portion of exhaust gases, and a flow rate of the exhaust gas is variably adjusted using a controllable valve.

13. (Original) The method of claim 12, wherein mixing of the exhaust gases with the fuel is accomplished upstream of the compressor.

14. (Original) The method of claim 13, wherein the mixed exhaust gases and fuel are directed into the compressor separately from the air.

15. (Original) The method of claim 12, wherein at least some mixing of the fuel with the air is accomplished upstream of the compressor.

16. (Original) The method of claim 15, wherein the mixed fuel and air are directed into the compressor separately from the exhaust gases.

17. The method of claim 12, wherein the air, fuel, and exhaust gases are directed into the compressor separately from one another and mixing takes place in the compressor.

18. (Original) The method of claim 12, further comprising the step of controlling a flow rate of the exhaust gases directed into the compressor.

19. (Original) The method of claim 18, wherein the controlling step comprises controlling the flow rate in response to a parameter associated with the engine.

20. (Currently Amended) ~~The method of claim 19,~~A method for operating a gas turbine engine, comprising the steps of:

compressing air in a compressor;

mixing fuel with compressed air from the compressor to produce an air-fuel mixture;

burning the air-fuel mixture in a catalytic combustor to produce hot combustion gases;

expanding the combustion gases in a turbine to produce mechanical power, and using the mechanical power to drive the compressor;

passing exhaust gases from the turbine through a recuperator and passing the air-fuel mixture through the recuperator to pre-heat the mixture by heat exchange with the exhaust gases;

directing a portion of exhaust gases from the turbine into the compressor to raise an inlet temperature to the combustor; and

controlling a flow rate of the exhaust gases directed into the compressor ~~wherein the controlling step comprises controlling the flow rate~~ in response to a measured combustor inlet temperature.

21. (Original) The method of claim 20, wherein the flow rate is controlled so as to always maintain the combustor inlet temperature higher than a predetermined minimum temperature necessary for proper operation of the catalytic combustor.

22. (Original) The method of claim 21, further comprising the step of deducing fuel/air ratio of the mixture entering the combustor, and controlling the combustor inlet temperature so as to optimize the combustor inlet temperature for said fuel/air ratio in such a manner that at all times a maximum allowable recuperator temperature is not exceeded.

23. (Original) The method of claim 21, further comprising the step of deducing fuel/air ratio of the mixture entering the combustor, and controlling the combustor inlet temperature so as to optimize the combustor inlet temperature for said fuel/air ratio in such a manner that a maximum allowable emissions limit is not exceeded.

24. (Original) The method of claim 23, further comprising the step of deducing fuel/air ratio of the mixture entering the combustor, and controlling the combustor inlet temperature so as to optimize the combustor inlet temperature for said fuel/air ratio in such a manner that an efficiency of the engine is maximized.

25. (Original) The method of claim 21, further comprising the step of deducing fuel/air ratio of the mixture entering the combustor, and controlling the combustor inlet temperature so

as to optimize the combustor inlet temperature for said fuel/air ratio in such a manner that emissions are minimized.

26. (Original) The method of claim 25, further comprising the step of deducing fuel/air ratio of the mixture entering the combustor, and controlling the combustor inlet temperature so as to optimize the combustor inlet temperature for said fuel/air ratio in such a manner that efficiency is maximized.

27. (Original) The method of claim 19, wherein the controlling step comprises controlling the flow rate to compensate for changes in ambient temperature.

28. (Original) The method of claim 27, wherein a relative portion of the exhaust gases directed into the compressor is increased when there is a decrease in ambient temperature.

29. (Original) The method of claim 19, wherein the controlling step comprises controlling the flow rate to compensate for changes in relative engine load.

30. (Original) The method of claim 29, wherein a relative proportion of the exhaust gases directed into the compressor is increased when there is a decrease in relative engine load.

31. (Original) The method of claim 12, wherein the portion of exhaust gases directed into the compressor is separated from the remainder of the exhaust gases at a point downstream of the recuperator.

32. (Original) The method of claim 12, wherein the portion of exhaust gases directed into the compressor is separated from the remainder of the exhaust gases at a point upstream of the recuperator such that said portion bypasses the recuperator.

33. (Original) The method of claim 12, further comprising the step of driving an electrical generator with the turbine.